

LISTING OF THE CLAIMS

1. (original) A system for quantifying baseline model quality, comprising:

an engine service database containing engine data;

a preprocessor for processing the engine data into a predetermined format, wherein the preprocessor includes a data segmenting component that segments the engine data into a plurality of groups based upon specific engines and further based upon specific time periods during which each data element was measured; and

an engine baseline modeling component that builds an engine baseline model for each of the plurality of groups using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions.

2. (original) The system of claim 1, wherein the segmenting component segments the engine data into a plurality of groups throughout a preselected time moving window.

3. (original) The system of claim 1, wherein the segmenting component segments the engine data into a plurality of groups throughout discrete time ranges.

4. (original) The system of claim 1, wherein the engine baseline modeling component generates a set of estimated regression parameters for each of the plurality of groups based upon the regression analysis, wherein each set of estimated regression parameters are representative of a baseline model for each group.

5. (original) The system of claim 4, wherein the engine baseline modeling component calculates a time series for each estimated regression parameter,

and wherein the engine baseline modeling component further calculates a trend for each estimated regression parameter over time.

6. (original) The system of claim 4, further comprising:
means for identifying fluctuations in trends for each estimated regression parameter representative of engine faults;
means for evaluating trends having identified fluctuations; and
means for identifying parameter estimate trends relating to baseline trend shifts.

7. (original) The system of claim 6, wherein the preprocessor maps engine data to an uncorrelated data set using a principal component analysis technique.

8. (original) The system of claim 1, wherein the preprocessor comprises a data acquisition component that extract engine data from the engine services database.

9. (original) The system of claim 1, wherein the engine baseline modeling component comprises a metric component that validates the engine baseline model.

10. (original) The system of claim 1, wherein the engine baseline modeling component comprises a heuristics component that generates rules for cleaning the preprocessed data.

11. (original) The system of claim 1, further comprising a model diagnostics component that evaluates performance of the engine baseline model.

12. (original) A method for quantifying baseline model quality, comprising:

storing engine data in an engine service database;

processing the engine data into a predetermined format in a preprocessor, wherein the processing includes segmenting the engine data into a plurality of groups based upon specific engines and further based upon specific time periods during which each data element was measured;

building an engine baseline model for each of the plurality of groups using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions.

13. (original) The method of claim 12, further comprising segmenting the engine data into a plurality of groups throughout a preselected time moving window.

14. (original) The method of claim 12, further comprising segmenting the engine data into a plurality of groups throughout discrete time ranges.

15. (original) The method of claim 12, further comprising generating a set of estimated regression parameters for each of the plurality of groups based upon the regression analysis, wherein each set of estimated regression parameters are representative of a baseline model for each group.

16. (original) The method of claim 15, further comprising:
calculating a time series for each estimated regression parameter; and
calculating a trend for each estimated regression parameter over time.

17. (original) The method of claim 15, further comprising:

identifying fluctuations in trends for each estimated regression parameter representative of engine faults;
evaluating trends having identified fluctuations; and
identifying parameter estimate trends relating to baseline trend shifts.

18. (original) The method of claim 17, further comprising mapping engine data to an uncorrelated data set using a principal component analysis technique.

19. (original) The method of claim 12, wherein the processing step further comprising extracting engine data from the engine services database.

20. (original) The method of claim 12, further comprising validating the engine baseline model.

21. (original) The method of claim 12, further comprising generating rules for cleaning the preprocessed data.

22. (original) The method of claim 12, further comprising evaluating performance of the engine baseline model.

23. (original) A computer-readable medium incorporating instructions for quantifying baseline model quality, comprising:

one or more instructions for storing engine data in an engine service database;

one or more instructions for processing the engine data into a predetermined format in a preprocessor, wherein the one or more instructions for processing includes one or more instructions for segmenting the engine data into a

plurality of groups based upon specific engines and further based upon specific time periods during which each data element was measured;

one or more instructions for building an engine baseline model for each of the plurality of groups using a regression analysis, wherein the regression analysis relates engine performance variables as a function of engine operating conditions.

24. (original) The computer-readable medium of claim 23, further comprising one or more instructions for segmenting the engine data into a plurality of groups throughout a preselected time moving window.

25. (original) The computer-readable medium of claim 23, further comprising one or more instructions for segmenting the engine data into a plurality of groups throughout discrete time ranges.

26. (original) The computer-readable medium of claim 23, further comprising one or more instructions for generating a set of estimated regression parameters for each of the plurality of groups based upon the regression analysis, wherein each set of estimated regression parameters are representative of a baseline model for each group.

27. (original) The computer-readable medium of claim 25, further comprising:

one or more instructions for calculating a time series for each estimated regression parameter; and

one or more instructions for calculating a trend for each estimated regression parameter over time.

28. (original) The computer-readable medium of claim 26, further comprising:

one or more instructions for identifying fluctuations in trends for each estimated regression parameter representative of engine faults;

one or more instructions for evaluating trends having identified fluctuations; and

one or more instructions for identifying parameter estimate trends relating to baseline trend shifts.

29. (original) The computer-readable medium of claim 28, further comprising one or more instructions for mapping engine data to an uncorrelated data set using a principal component analysis technique.

30. (original) The computer-readable medium of claim 23, wherein the one or more instructions for processing further comprise one or more instructions for extracting engine data from the engine services database.

31. (original) The computer-readable medium of claim 23, further comprising one or more instructions for validating the engine baseline model.

32. (original) The computer-readable medium of claim 23, further comprising one or more instructions for generating rules for cleaning the preprocessed data.

33. (original) The computer-readable medium of claim 23, further comprising one or more instructions for evaluating performance of the engine baseline model.